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Making Decisions: Household Water Saving Equipment and Practices

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Why save water?

Increased water usage has overburdened municipal and private sewage treatment systems in some areas. In other areas, water is a scarce commodity and costs have increased. However, there is not more water available now than when the earth was formed. The American Water Works Association estimates residential household water use at 60 gallons per person per day.

The water equipment we use in and around the home and how we manage that equipment determines our water use. The largest water users are the shower and toilets, accounting for about two-thirds of the water used in an average household. Toilets use up to half of the household water supply. However, with the number of water and energy saving devices on the market, the consumer needs to gather information before making decisions about the features and claims.

National Energy Policy and Conservation Act

The 1992 Energy Policy and Conservation Act sets limits on water and energy consumed by appliances and fixtures. It requires all shower heads, bathroom and kitchen faucets and replacement bathroom and kitchen aerators made after Jan. 1, 1994 to have flow rates of 2.5 gallons per minute (gpm) or lower.

<i>Water Use Equipment/Practice</i>	<i>Amount Used - Ranges</i>	<i>Amount Used with Water-Saver Method - Estimates</i>
Shower	2 to 10 gallons per minute (gpm)	2 to 5 gallons per minute
Tub bath	36 gallons full tub	10-12 gallons low level
Toilet flush	3 to 7 gallons per flush or low-flush devices	1.5 to 5 gallons per flush using tank displacement,

Brushing teeth	2 gallons tap running	1 pint to wet brush, turn off faucet, rinse briefly
Shaving	3 to 5 gallons tap running	1 gallon to fill basin, rinse briefly
Dishwashing	20 gallons tap running	2 to 8 gallons to wash, rinse in pan or sink
Clothes Washer	40-57 gallons per load, top loading, regular wash	28 gallons per load, front loading, regular wash. Set water level to size of load
Automatic Dishwasher	15 gallons per full load	5.5 to 20 gallons per full load

Showers

Older showers may use from two to ten gallons of water per minute (gpm) fully opened. Newer shower heads may use about 2 to 3 gpm. The shower heads designed to use less water differ in spray patterns, mounting and functions.

What spray and flow features do I want?

Some low-flow shower heads offer selections for spray patterns. Others offer settings that provide a very low flow for shampooing. Some have a shutoff switch.

Spray patterns vary from mist, sharp, wide, to massage or pulsating. The spray pattern is changed by rotating either the shower head or a ring around the head, or by twisting a lever or changing a dial. Check to see which is most convenient for you and others to use. Can everyone reach the control? Is the spray pattern too forceful?

Selecting the shower head device may depend on your existing shower installation. Most shower heads mount directly onto the shower pipe. Some are available on a flexible hose and can be mounted on a bracket attached to the pipe, allowing the shower head to be hand-held.

Water pressure may affect low-flow shower heads. With low water pressure, select a low-flow shower head that delivers the water needed at low pressure, or a low-flow shower head that can be switched off when the water pressure is low.

Cost and Savings

Cost can range from \$7 to \$70. The payback depends on the size of your household and the number and length of showers. Householders taking two four-minute showers per day may save enough hot water in two years to pay for the cost of replacing the shower head with a low-flow head. Areas where water use is restricted and not readily available, making it costly, may save even more. Utility charges for heating water affect the savings on energy bills.

Safety Features

Because low-flow water heads use little water, quick changes in water pressure resulting from toilet flushes can change the shower temperatures quickly. Bursts of hot water can be painful. Pressure-balancing valves control hot surges and are mandatory on shower heads after 1996. Lowering the water heater temperature can also prevent scalds. Other devices can be purchased that can be attached between

the shower pipe and head to cut the water supply if the water reaches a certain temperature.

Toilets

Under the new Federal standard for water use, new toilets must meet a 1.6 gallon water limit per flush. Old toilets, especially those more than 10 to 15 years old, may use three or more gallons per flush. The older toilets may tend to have fewer drainage problems than the newer ones, but manufacturers are working to provide a more efficient toilet that flushes with less water. There are also toilets that use no plumbing or water as they compost the waste or use a burn technique.

How do they operate?

There are two types of toilets available — pressure assisted and washdown or gravity-flush. Although the pressure-assisted toilets generally perform better than gravity-flush, they may be louder. The noise lasts about 10 seconds. The pressure-assisted toilets generally remove solid waste and limit odor and soil problems better than gravity flow models. You may find some basic changes in the new styles of low-flush toilets including seats closer to the water or seats higher than typical.

The most important feature is how the toilet performs in removing solid waste. If you have to flush the toilet two or three times to remove the waste, it is not going to save water. Toilets that have water fully covering most of the inner bowl are more likely to have less odor and soiling problems because they will submerge the waste completely. Gravity flow toilets tend to clean the bowl and wash down the bowl's walls during the flush, but may have poor rim wash-down.

Before installing a low-flush toilet, check to make sure your present drain system is working and does not block easily. If your present drain system blocks often, have it fixed before you install a low-flow toilet or select a toilet that is rated high for "drain carrying." The toilet must have enough force and water to carry the flushed waste through the drain system. Ask about reported clogging problems.

Cost and Savings

Depending on existing water costs and availability in your area, water-saving toilets should eventually pay for your investment. Rates for water have been increasing; from 1992 to 1994, water costs increased 10 percent in the U.S.

Can I lower the flow in my old toilet?

Most older toilets use three to seven gallons per flush. To reduce the amount of water in the tank, displace some of the water. A plastic bottle filled with water would be one example. The object should not release or leak particles or materials into the tank. For example, bricks should not be placed in the tank unless they are contained with plastic bags or containers. The object should not interfere with any of the mechanisms or tank operation. Other methods that can be used are devices purchased to go inside the toilet tank such as the toilet dam, early closure flapper and the dual flusher.

The toilet dam partitions off a section of the tank. The early closure flapper seals the valve between the tank and toilet before the water has all drained from the tank. The dual flusher has two levers from which to choose. One lever provides a normal flush and the other a miniflush for liquid waste. Adjusting the float in older models to shut off the fill at a lower tank level is another option.

Lowering the flow in existing older toilets can affect their performance in moving solid waste from the

bowl and through the drains.

Faucets and Pipes

Flow control devices on sink faucets can save up to 25 percent water usage. Devices to lower the water flow on faucets and/or to shut off automatically after a length of time are available. Consider how the faucets are used and which need low flow devices.

Leaking faucets can lose gallons of water. Leaky pipes not only waste water, but damage wood and may create stains and rusting, resulting in loss of other types of resources.

Clothes Washers

The total water used in laundering one load of clothes ranges from 20 to 57 gallons. Some machines have a suds-saver system. Hot, sudsy water is pumped into a storage tub and later returned to the washer with added hot water and detergent for a second use. However, consider safety, pollutants and soil types.

Front-loading machines use less water to wash the same load than top-loading machines.

Front-loading washers fill to just below the door opening. Textiles and items tumble in and out of the water for cleaning. Front-loading washers use less detergent, electricity and water (typically 20 to 28 gallons for a front-loading model, compared to 45 gallons in a top-loading wash cycle). Reported savings in water and energy bills vary from \$60 to \$100 per year.

New high efficiency machines use 50-60 percent less electricity, 40-50 percent less water, and are reported to be more effective in cleaning action, according to studies by the US Department of Energy, and by water and waste-water utilities. Also, up to 30 percent more water is removed in spinning, reducing the drying cycle and saving energy.

Conserving Water

Conserving water can be householders' challenge and goal. Managing existing water-using equipment to optimize use can go a long way in lowering water usage. Repairing leaks saves water and prevents damage from the moisture in or on surrounding surfaces. Water that is safe for reuse can be used for other purposes.

References

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